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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/824,111

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Seung Duk Baek

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7590

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EXAMINER

THAI, LUAN C

ART UNIT

PAPER NUMBER

2891

DATE MAILED: 02/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/824,111	Applicant(s) BAEK ET AL.	
	Examiner Luan Thai	Art Unit 2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 December 2005.  
 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-39 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 14 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All b) ☐ Some \* c) ☐ None of:  
 1. ☒ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/14/04&amp;11/23/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election *without traverse* of Group I, claims 1-39, filed 12/12/05 is acknowledged.  
Claims 40-59 are canceled.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-5, 8, 10, 12-16, 19, 21, 23-24, 27-30, and 33-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Poo et al. (6,894,386).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1-3, 8, 10, 12-14, 19, 21, 23-24, 27-30, and 33-35, Poo et al. (see specifically figures 1 and 3B) disclose a microelectronic substrate including a plurality of unseparated integrated circuit dice (301-302) therein, and a redistribution structure (308/320) comprising interleaved conductive (308) and insulation layers (320/340) (see figure 3D) formed on the unseparated integrated circuit dice, the redistribution structure including at least one

conductive layer (308) including a compressive edge connector contact (309) coupled to the unseparated integrated circuit dice (301-302), wherein the redistribution structure is configured to provide a passive electronic device (e.g. capacitors, Col. 3, lines 35+) electrically coupled to the integrated circuit dice, which comprise memory devices (Col. 3, lines 35+). Poo et al. further disclose a support of protective layer (320/340) affixed to a surface of the substrate and configured to support the connector contact (309).

4. Claims 1-2, 4-8, 10 and 23-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Saia et al. (5,874,770) and under 35 U.S.C. 102(e) as being anticipated by Lin et al. (6,746,898).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1-2, 4-8, 10 and 23-26, Saia et al. (see specifically figure 12) disclose a microelectronic substrate including a plurality of integrated circuit dice or group of integrated circuit dice (44) (Col. 7, lines 9+), and a redistribution structure comprising interleaved conductive (38/34/47) and insulation layers (42/10/40) formed on the integrated circuit die, the redistribution structure including at least one conductive layer including a connector contact (56) coupled to the integrated circuit die (44), wherein the redistribution structure is configured to provide a passive electronic device (e.g. capacitor 37, inductor 33, see figures 6-7, Col. 6, lines 30+) mounted on the substrate and electrically coupled to the integrated circuit die (44), wherein the redistribution structure comprises a land configured to provide electrical connection to a contact pad of the passive device (e.g., capacitor 37, inductor 33, see figures 6-7 and 12). Saia et al. further disclose a support or protective layer (54/42) affixed to a surface of the substrate and configured to support the connector contact (56).

Lin et al. also teach a microelectronic substrate and a redistribution structure identical to Saia et al.'s structure device; therefore, the claim's structure in claims 1-2, 4-8, 10 and 23-26, are also rejected under 35 U.S.C. 102(e) as being anticipated by Lin et al. for the similar reasons detailed above.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 9, 11-22, and 27-39, are rejected under 35 U.S.C. 103(a) as being unpatentable over Saia et al. (5,874,770).

Regarding claims 12-13, 15-19 and 21, Saia et al. disclose the claimed invention as detailed above except for explicitly teaching the connector contact (56) being a compressive connector contact.

Since Saia et al. teach the connector contact (56) having a planar surface and being made of titanium/copper/titanium (Col. 8, lines 1-8, Col. 7, lines 53-65), it would have been obvious to modify the connector contact (56) as a compressive connector contact, and such modification is held to be within the ordinary designing ability expected of a person skilled in the art.

Regarding claims 3, 14, 27-30, 32-33 and 35-39, Saia et al. discloses the claimed invention (including the protection layer (42) made of a thermally conductive polymer (Col. 7, lines 13+) affixed to the substrate (e.g., die 44)) as detailed above except for teaching the plurality of integrated circuit dice (44) being unseparated integrated circuit dice.

Although Saia et al. do not teach the plurality of integrated circuit dice (44) being unseparated integrated circuit dice, an electronic module, which comprises unseparated integrated circuit dice, as applicant claimed, does not produce any new and unexpected result that is different from the electronic module, which comprises a plurality of separated integrated circuit dice. Moreover, the dice (44), as taught by Saia et al., may comprise any of number of electrical circuit components (Col. 7, lines 9+), and the specification contains no disclosure of either the critical nature of the claimed unseparated integrated circuit dice or any unexpected results arising there from. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to consider the dice (44) in Saia et al.'s electronic module to construct with a plurality of unseparated integrated circuit dice since such dice may comprise any number of electrical circuit components, as taught by Saia et al.

Regarding claim 34, although Saia et al. do not teach the integrated circuit dice (44) comprising memory devices, Applicant's claimed structures in the claim do not distinguish over Saia et al. references and it has been held that a recitation (e.g., memory devices) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

Regarding claims 9, 11, 20, 22, and 31, since Saia et al. disclose the protection layer (42) made of a thermally conductive polymer and affixed to the substrate (e.g., die 44), as described above, such layer would dissipate the heat form the dice and obviously to be considered as heat sink.

Art Unit: 2891

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is 571-272-1935. The examiner can normally be reached on 6:30 AM - 5:00 PM, Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bradley W. Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**Luan Thai**

Primary Examiner

Art Unit 2891

February 19, 2006